GS212:

Drawing Parcels

(Version 3.1)

These lessons show you basic and intermediate GeoSync functions. After reviewing some Basics of GeoSync and the tools for map viewing and information gathering, you will learn to use GeoSync's Drawing Tools. If you have questions about the GeoSync program or any of the information covered in this lesson, please ask for help.

MapSync®

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I. Getting Started

Before beginning this Gs201 the student should be comfortable with the basics of GeoSync software including:

- Opening GeoSync and the desired project
- Zooming and navigating the Map View
- Selecting features
- Identifying features and editing Feature Attribute Data
- Using MapTips
- Using QuickSearch
- Turning layers on and off
- Using SQL
- Printing Reports

If you have any questions about the above topics please ask the instructor to review before proceeding.

Refer to **Gs101: Introduction to GeoSync** class document for more information on basic GeoSync tools and functionality.

II. Drawing in GeoSync

In order to draw and/or edit the geometry of features on a given layer, the Edit Layer mode must be activated. After selecting the Edit Layer command, GeoSync is in the Edit Mode for the current layer.

Note: The zoom and layer visibility tools are available during the edit session.

Layer Requirements for Editing:

- Read Only should be turned OFF for the layer's Shape file.
- The shape file being edited can only be open by the instance of GeoSync editing the layer.
- The layer must be set to Allow Update (Layer Manager).
- Any active Layer Relates must be removed (Layer Manager).
- The layer must be set as the Current Layer.
- A valid Temp Directory must be set (directory for automatic backups; see File menu/Settings).
- The layer must have a populated MUID field.

To Edit a Layer:

1. Make the desired layer current.
2. Open the *Edit* menu and click *Edit* Layer.
3. GeoSync switches to *Edit Mode* and the Draw / Edit tools appear on the tool bar.

THE POLYGON DRAWING TOOLS 25 MIN

A myriad of tools are provided to draw and/or edit the geometry of polygon features.

- Draw Polygon : Create polygon features such as parcels, building outlines, or tax districts.
- Draw Rectangle : Create rectangular shaped polygons.
- Ortho: With Ortho active, draw a polygon or line feature in the cardinal directions (due North, South , East, or West).
- Draw Undo : GeoSync tracks the order in which features are drawn and edited. During an Edit Layer session, each click of the Draw Undo tool reverses the last draw / edit action performed.
- Select Feature Edit : Enables the selection of features for editing. Individual or multiple features can be selected at once.
- Select Feature Crossing : Enables the selection of any feature that crosses the window or is contained therein, for editing.
- Delete Vertex : Remove vertices from a line or polygon feature.
- Move Vertex : Move a line or polygon vertex.
- Add Vertex : Place additional vertices along the length of a line or polygon feature.
- Move Feature : Move a feature or multiple features.
- Delete Feature : Delete Features from the map view, and consequently, delete their records (Feature Attribute Data) from the Shapefile.
- Align Feature : Moves and rotates line or polygon features.
- Split Polygon : Split an existing polygon feature into multiple polygon features.
- Union Polygons : Combine two polygons to form one polygon. Polygons, which are to be combined, must overlap or share a common boundary.
- Snaps : With snaps on, vertices of a feature can be placed (drawn or moved) exactly along lines or on the vertices of another feature. For many applications it is essential that lines and polygons have true intersections, which Snaps make possible. Additionally, the features being snapped to do not have to be on the same layer as the layer being edited.

Using Snaps

Snaps allow for more exact drawing when features are adjoined. Features on point, line, or polygon layers ca be snapped to features on other layers.

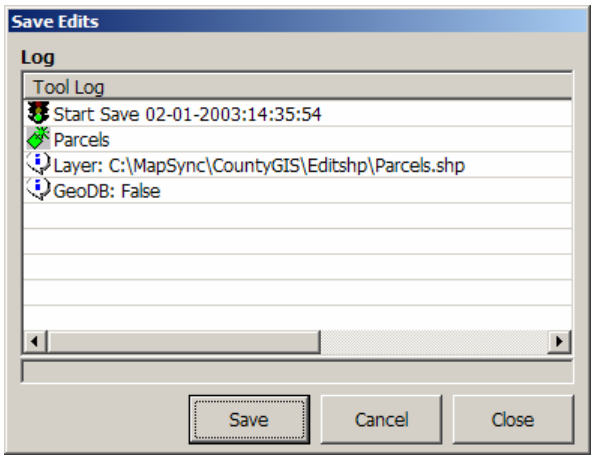
1. Activate Snaps.
2. Next to the Snaps tool on the tool bar, select the layer whose features will be snapped to.
3. On the tool bar, select Snap Type:
    - Nearest - a location along the length of a line or polygon feature nearest the position of the pointer tool.
    - Vertex – a point of deflection on a line or polygon.

Saving Edits

While drawing/editing features, new features and changes to the layer are not saved until exiting Edit Mode.

To Save Changes:

1. Open the *Edit* menu and click the *Stop Editing* command.
2. The *Save Edits* dialog opens. From here you have the option to either Save or Discard changes made to the layer during this editing session.
    A. Save changes to the layer by clicking the *Save* button, then *OK* on the "*Layer Saved*" message dialog and then click the *Close* button on the *Save Edits* dialog.
    B. Discard any changes to the layer by clicking the *Close* button on the *Save Edits* dialog.
3. GeoSync returns to standard operating mode.



DRAWING AND EDITING POLYGONS

Set the current layer and activate the Edit Layer mode. When editing polygon features in GeoSync, the following tools are available:

Draw a Polygon

1. Activate the *Draw Polygon* tool.
2. Click in the map view at the desired beginning location.
3. Move pointer and click at each desired break / corner / vertex.
4. To undo the last drawn vertex while drawing a polygon feature, right click and select Undo Vertex.
5. Right-click and select End Feature to finish.

Draw a Rectangle

1. Activate the *Draw Rectangle* tool.
2. Click and hold in the map view at desired upper left corner of rectangle.
3. Move pointer toward lower right corner and release to finish.

Add a Vertex

1. Select a polygon to which vertex/vertices are to be added.
2. Activate *Add Vertex* tool.
3. Move pointer to desired location on feature and click to add vertex.
4. Repeat click as desired for additional vertices.

Delete a Vertex

1. Select a polygon whose vertices are to be deleted.
2. Activate *Delete Vertex* tool.
3. Select the vertex to be deleted.
4. Continue to select vertices to be deleted as desired.

Move a Vertex

1. Select a polygon whose vertices are to be moved.
2. Activate *Move Vertex* tool. Snaps are activated.
3. Move pointer to vertex to be moved so a larger box appears which indicates the snap is engaged.
4. Click and hold the vertex. Move the pointer (vertex should be attached) to the desired location and release.
5. Repeat move as needed.

Split a Polygon

1. Select a polygon feature to be split.
2. Activate the *Split Polygon* tool.
3. Set Snap Type.
4. Move pointer to the desired beginning location of the cut line. A box appears to indicate the snap is engaged. Click to begin the split .
5. Move pointer to the desired ending location of the cut line. A box appears to indicate the snap is engaged. Click to finish the split.

Union Polygons

1. Select the two polygons to be joined.
2. Activate the Union Polygons tool.

Move Polygon(s)

1. Use the *Select Feature* tool to select the polygon(s) to be moved.
2. Activate *Move Feature* tool. Snaps become active.
3. Move pointer to a vertex on a selected feature so a larger box appears which indicates the snap is engaged.
4. Click and hold the polygon(s). Drag the polygon(s) to desired location and release.
5. Repeat move as needed until polygon(s) is(are) properly positioned.

Delete Polygon(s)

1. Use the *Select Feature* tool to select the polygon(s) to be deleted.
2. Activate *Delete Feature* tool.
3. Selected features disappear from map view.

Align Polygon(s)

1. Select polygon(s) to align.
2. Activate the *Align* tool.
3. Select the first vertex of the object to be moved. This is the hinge point which will match up exactly with third point selected.
4. Select a second vertex of object to be moved. The first two points have established the first line.
5. Select a third point (a vertex or otherwise) where the first selected vertex is to be hinged.
6. Select a fourth point to define the second line to which the first line (defined by first two selected points) is to match.

Note: Neither line is resized to match the other line's length. The Align tool uses the first and third points to define a hinge.

Draw Undo

Activate *Draw Undo* tool. Each click of the *Draw Undo* tool button undoes the previous draw / edit action.

III. Exercises

Draw Polygons

Draw Polygon #1

Draw a simple polygon.

1. Make *Parcels* the Current Layer.
2. Select *Edit Layer* from the *Edit* menu.
3. Click the *Draw Polygon* button and draw a polygon; click to begin drawing at desired location on map view, click at each intersection, right-click and select *End Feature* to close the polygon.
4. *Select* the polygon.
5. Click and *Move* the selected polygon.
6. *Add* a vertex.
7. *Move* a vertex.
8. *Delete* a vertex.
9. Repeat a few times.

Draw Polygon #2

Draw a second polygon.

1. Click *Draw Polygon* and begin to draw Polygon #2.
2. Right-click and select *Undo Vertex*.
3. Close the polygon.
4. *Select* new polygon.
5. *Delete Feature*.
6. *Draw Undo* – erased polygon comes back.

Using Snap New to Draw

You will turn Snaps on in order to snap a polygon vertex to a new feature vertex on Polygon #2.

1. Click *Snap On*.
2. Select *Parcels* as the Snap Layer
3. Draw a third polygon, but snap to Polygon # 2 corners.
4. *Select* Polygon # 3 and *Erase*.

Draw Polygon #3 and Snap Existing

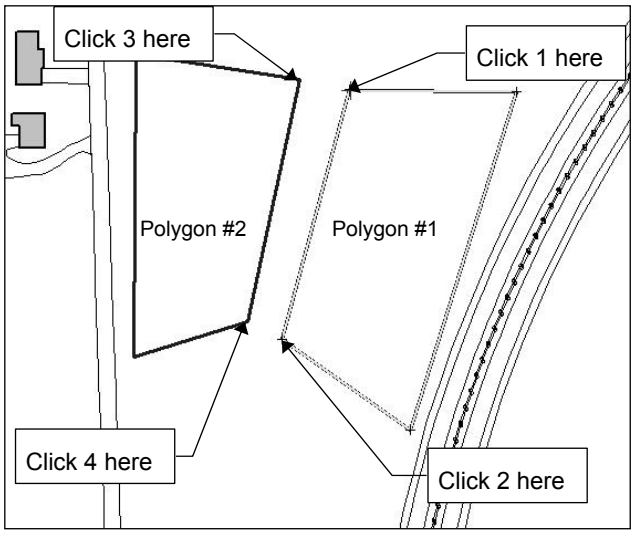
Snap Polygon #3 to a road intersection.

1. Draw a Polygon.
2. Select Polygon.
3. Click *Snap On*
4. From the *Snap Layer* list, select *Roads*.
5. Click *Move Feature.*
6. Move pointer to a vertex of the selected polygon. The Snap Box will appear.
7. Click, hold and drag the polygon to the vertex on a Road.
8. The Snap Box will appear. Release.

Select Polygon #2 and Align to Polygon #1

Use the *Align* tool to join a polygon to another feature.

1. Select Polygon # 1.
2. Click *Align Feature* .
3. Click 4 times as shown:



NOTE: Click 1 represents the base point and Click 2 establishes the alignment angle for Polygon #1. Click 3 is the point where the Click 1 point attaches on Polygon #2 with Click 4 setting the angle for Polygon #2. Or, for example, if you reversed Click 3 and Click 4 on the illustration, Polygon #1 would flip over to align Click 1 point to Click 3 point.

4. Click the *Draw Undo* button; the *Align* action is removed.
5. Repeat to align Polygons #1 and #2.

Note: Polygon 1 will align anywhere you click points 3 and 4; you do not need to align to another map feature.

IV. Drawing Parcels

DRAWING PARCELS FROM AERIAL PHOTOS

Create Parcel boundaries using the Aerial Photos (DOQQs) and Existing PVA maps.

1. Draw the new parcel boundaries.
   - Turn on the DOQQ Aerial background image layer (on Layer Legend).
   - Set the current layer to "*PARCELS*".
   - Select *Edit Layer* from the *Edit* menu.
   - Draw the new parcels using the *Draw Polygon* tool.
   - Use your existing PVA maps for visible features on the DOQQ Aerial background image.

DRAWING PARCELS FROM PVA MAPS

Create Parcel boundaries using scanned and rectified PVA maps:

1. Set up a background image from the Scanned PVA maps.
   - Open *Layer Manager.*
   - Select *Add Layer* and *Add Image.*

- Locate the desired scanned PVA map image.
- Select *Open*.
- Turn the new layer on.

2. Draw the new parcel boundaries.
   - Set current layer to "*PARCELS*".
   - Select *Edit Layer* from the *Edit* menu.
   - Draw the new parcels, "tracing" over the parcels on the image.
   - Select *Stop Editing* under the *Edit* menu.
   - Pick *Save* and *Close*.

DRAWING PARCELS FROM SCANNED PLATS

Create Parcel boundaries by digitizing over scanned plats.

Setup the Scanned Plat as a Background Image

1. Scan the subject plat in a .JPG format and save it in the PLATS folder.
2. Make a copy of the template world file (.jgw) using the same name as the scanned plat. This world file will make the plat image display outside the county boundary.
3. Add the scanned plat as an Image layer (see Lesson 4, part 1)
4. Locate the scanned image on the map.

Draw/Digitize the New Parcels

1. Turn the new scanned plat layer On (Layer Legend).
2. Set the Parcels layer current.
3. Select *Edit Layer* from the *Edit* menu.
4. Draw the new parcels (*Draw Polygon)* by "tracing" over the property on the image.
5. Select *Stop Editing* under the *Edit* menu.
6. Pick *Save* and *Close*.

Scale Newly Drawn Polygons

1. Use the *Measure Line* tool to measure a line on a newly drawn Parcel for which you can read the platted distance.
2. Divide the platted distance by the measured distance to figure the scale factor.
3. With the Parcels Layer current Select *Edit Layer* under the *Edit* menu.
4. Select the newly drawn Parcels.
5. Select *Scale Features*  .
6. Enter the scale factor and pick *OK*.

Align the Newly Drawn Parcels to Existing Parcels

1. With the Parcels still selected, pick *Align Features*.
2. Using a two points on the parcels to be moved and two matching points on to parcels to be adjoined follow the instructions from page _____ to Align the features.

Delete the Parent (old) Parcel

1. Select the Parcel to delete.

2. Select Delete Feature .

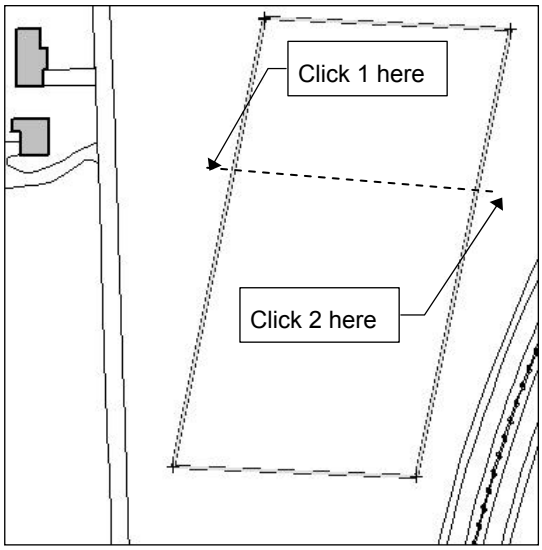
V. Modifying Existing Parcels

The following lessons show the standard GeoSync tools needed to maintain and update the existing parcels on your PARCELS layer. Please consult GeoSync Help for further instructions in using GeoSync.

SPLIT A PARCEL

Use *Split Polygon* to divide a polygon.

1. *Select* Polygon.
2. Click *Split Polygon* .
3. Activate Snaps.
4. Set *Snap Layer* to *Parcels.*
5. Set *Snap Option* to *Vertex* or *Nearest.*
6. Move to desired location on the selected polygon.
7. When the snap is engaged, click.
8. Move to the other end of desired split line and click when snap engages.
9. Click *Draw Undo.*
10. Repeat and perform another split on the polygon.



SIMPLE PARCEL UNION

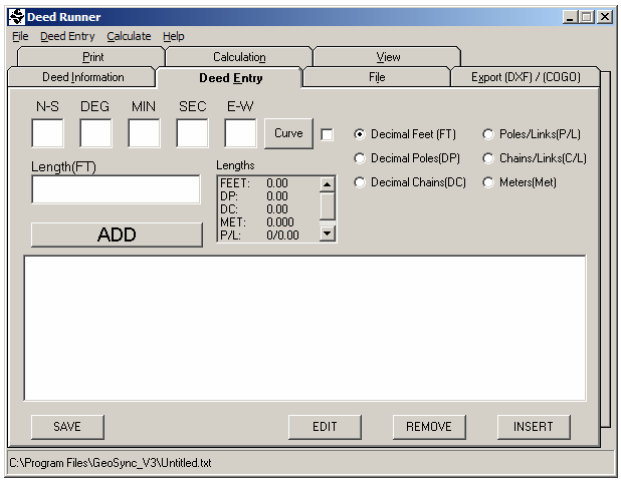
To join two Parcels:

1. Set *PARCELS layer* current.
2. Select *Edit Layer* from the *Edit* menu.
3. Select the Parcels to be Unioned:
4. Use the *Select Feature* tool. Select one parcel.
5. Hold the *Ctrl* key on the keyboard and select the second parcel.
6. Select Union Polygons .

VI. Deed Runner

Using the DeedRunner Program

Open Deed Runner by opening the *Tools* menu and selecting *Deed Runner.* The Deed Runner program opens:



Consult the Help files in the Deed Runner program for instructions on using Deed Runner. For this lesson, begin by clicking the Deed Information tab.

Deed information, such as Grantor, Grantee, etc. can be saved with the property boundary.

The Deed Entry tab is used to enter the bearings and distances needed to reproduce the property boundary.

Entering Boundary Information

Use the *Deed Entry* tab to draw an example parcel. Click the *Deed Entry* tab, the Deed Entry dialog displays. Add the calls as shown in the Window that uses the first call as an example.

1. Use the mouse to set the focus in the *N-S* entry box by clicking on the box.
2. Type **N** and *Enter* from the keyboard; the focus changes to the *DEG* entry box (you can always set the focus in any entry box by clicking on the box with the mouse).
3. Type **86** and *Enter*; the focus changes to the *MIN* entry box.
4. Type **15** and *Enter*; the focus changes to the *SEC* entry box.
5. Type **11** and *Enter*; the focus changes to the *E-W* entry box.
6. Type **W** and *Enter; the* focus changes to the *LENGTH (FT)* entry box.
7. Type **76.63** (if the length is in units other than feet, use the mouse to select the appropriate units) and *Enter*. The focus changes to the *ADD* command button.
8. Click the *Add* button or press *Enter* and the entered deed call will be added to the *Description* list box.

   If the distance units are set to units other than feet, the program will convert the distance to feet when it adds the call to the *Description* list box. The focus will change to the *N-S* entry box. Repeat the process entering the following calls:

N 68-22-07 W, 213.97	N 74-51-24 E, 258.88
S 00-27-23 W, 357.97	N 19-10-01 W, 86.02
S 17-11-16 E, 430.76	N 15-09-08 W, 165.00
N 70-53-06 E, 234.73	N 11-32-22 W, 145.87
N 73-45-56 E, 50.00	N 68-09-03 W, 239.34

7. Click on the CALCULATE tab to determine the Closure (FT) and the Area.
8. To view the boundary, click the VIEW tab.
9. Click *Save* and save as **SUBDIV.TXT**.

Importing a DeedRunner File

After the bearings and distances for a property have been entered into DeedRunner and saved, the property (parcel) can be placed as a feature on a map layer (but only in GeoSync).

Add a DeedRunner file to the PARCELS layer:

1. Set *PARCELS* as the current layer.
2. Open the *Edit* menu and click *Edit Layer*.
3. Start *DeedRunner* (Open the Tools menu and click DeedRunner).
4. Build and save a new DeedRunner file or select an existing file from the File tab.
5. Click the DeedRunner button on the drawing tool bar.
6. Click the location for the property on the MapView. The property boundary is drawn on the map.

PRACTICE EXERCISE

Use these exercises to continue to develop your drawing skills in GeoSync.

1. Use *Layer Manager* to *Add* the new road that was located using GPS (C:\MAPSYNC\CountyPVA\GpsExport\GPSRD.shp).
2. Draw a template of the subdivision using the plat.

- Set the current layer to "*PARCELS*".
- Edit the PARCELS layer.
- Use *Deed Runner* tab to reproduce the street right-of-way and each of the blocks of lots.

1st Block of Lots	*Right-of-Way*	*2nd Block of Lots*
S 04-31-35 W, 199.91	S 04-35-58 W, 229.83	S 68-09-03 E, 239.34
S 04-31-22 W, 55.50	S 16-20-58 E, 60.00	S 11-32-22 E, 145.87
S 16-14-04 E, 108.00	S 16-20-58 E, 264.16	S 15-09-08 E, 165.00
S 16-14-04 E, 236.47	S 73-45-56 W, 50.00	S 19-10-01 E, 86.02
S 70-53-06 W, 234.73	N 16-14-04 W, 236.47	S 74-51-24 W, 258.88
N 17-11-16 W, 250.00	N 16-14-04 W, 108.00	N 16-20-58 W, 264.16
N 17-11-16 W, 180.76	N 04-31-22 E, 55.50	N 16-20-58 W, 60.00
N 00-27-23 E, 132.00	N 04-31-35 E, 199.91	N 04-35-58 E, 229.83
N 00-27-23 E, 225.97		
S 68-22-07 E, 213.97		
S 68-15-11 E, 76.63		

- Place each block on the map.
- *Split* the blocks into individual lots.

3. Delete the original (parent) parcel.
4. Update the "View" project layers (so others may begin to update the database information).

VII. Managing Shape Files

UPDATE THE "VIEW" LAYERS

Use Windows Explorer to copy the edited layer files from the *EditSHP* folder to the *SHP* or *ViewSHP* folder so the newly created parcels can be "Viewed" by others.

Create a New Layer

GeoSync has the capability of creating new (blank) point, line, or polygon shape files. When a new (blank) layer is created it is automatically added to the current project.

To Create a New Layer:

1. Open the *Tools* menu and click *Create New Layer*.
2. Select Point, Line, or Polygon.
3. Select Save New.
4. The File / Folder Explorer opens. Enter a name for the layer and select location to save the layer.
5. Select Save As. A message appears: "Shape file created and added to project".

Export a Layer

New shape files (layers) can be created from the current layer or from selected features of the current layer.

Export Current Layer

1. Open Layer Tools and click the *Advanced* tab.
2. Select the subject layer from the layer name list on the left of the *Layer Tools* dialog then activate the *Export Current Layer* tool.
3. In the *File Export* dialog that appears, enter a name for the new layer and select a location to store the new layer.
4. Select *Save As* to proceed with export.
5. You have the option of adding the new layer to your current project. Click *Yes* or *No*.

Export Current Selection

1. Set the subject layer current and select the features to be exported to a new layer (Shape File).
2. Open Layer Tools and click the *Advanced* tab.
3. Acitvate the *Export Current Selection* tool.
4. In the *File Export* dialog that appears, enter a name for the new layer and select a location to store the new layer.
5. Select *Save As* to proceed with export.
6. You have the option of adding the new layer to your current project. Click *Yes* or *No*.

Clearing a Layer

The Clear Current Layer tool will completely remove all features (points, lines polygons) from a layer while maintaining the layer's data structure.

To Use:

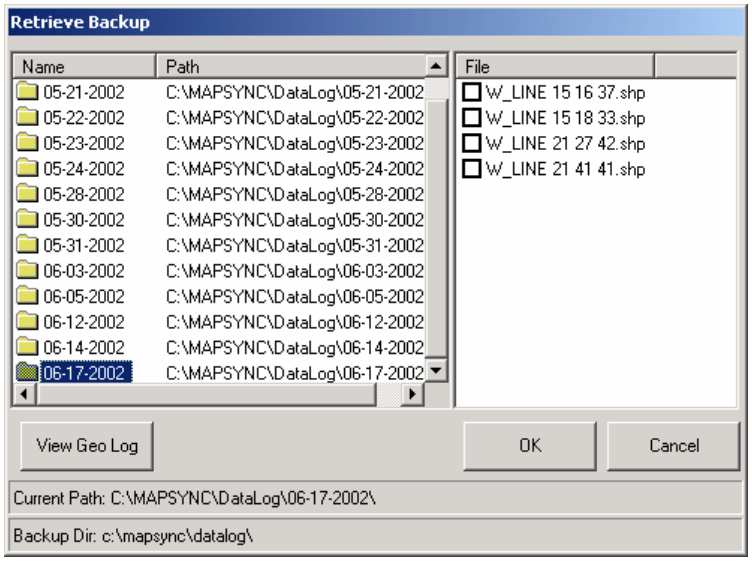
1. Open Layer Tools and click the *Advanced* tab.
2. Select a layer from the layer name list on the left of the *Layer Tools* dialog. Activate the *Clear Current Layer* tool.
3. A GeoSync Message appears. Select *Yes* to clear the layer.
4. All features on the layer have now been deleted.

Retrieve a Backup Layer

A layer is automatically backed-up before a major edit command is processed. This automatic back up makes a copy of the layer using the current layer name with the addition of the time (before the change) at the end of the file name. The back-up layer is stored in a subfolder named with the date the edit is made. This subfolder is located under the folder specified in the *Temp Dir* setting in the *Project Settings* on the *General* tab (ex. C:\MapSyncDatalog\06-17-2002\W_LINE 21 41 41.shp).

To Use:

1. Open Layer Tools and select the Advanced Tab.
2. Activate Retrieve Backup Layer tool.
3. From the Retrieve Backup Dialog, select the date files were edited in error.
4. From the File box, select the time.
5. Select OK.
6. At the prompt, select Yes to overwrite the existing layer with the backup information.
7. Review the Tool Log to insure the process ran successfully.



Summary – Q & A